



paper tape reader



MODEL 119R TAPE READER WITH SPOOLING

SERIES 119

The Series 119 Paper Tape Reader is intended for use in extraction of data stored on punched paper tape and presenting this data, in the form of contact closures, to other equipment.

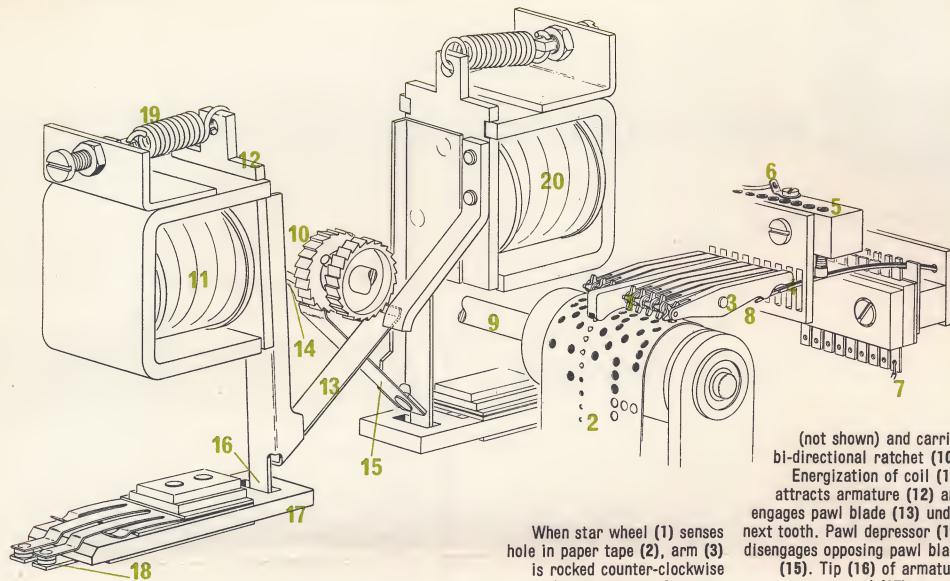
APPLICATIONS

- Control of automatic typewriters, printers, and punches
- Tape programs for automatic testing
- Machine tool control systems
- Automation of electro-mechanical equipment
- Programming digital-to-analog converters
- Tape input to low-priced computers
- Low-cost memory with bi-directional access

The Series 119 Paper Tape Reader reads up to 8 channel punched paper tape, bi-directionally, at speeds up to 30 c.p.s. The simplicity of design accounts for its high degree of reliability. The basic mechanism has been life tested for 125,000,000 characters (and error checked) without losing a single bit of data.

All readers are backed up by a full one year warranty on parts and labor.

TAPE FEED SYSTEM



The unique dual cross-coupled electro-magnetically actuated pawl system (patent pending) which advances the tape bi-directionally offers the designer the simplest method of integrating the Tape Reader into a system. No critical pulse widths or rise times are required. The stepping of the tape occurs on the spring return stroke of the electro-magnet. When the coil is energized and the armature pulls in, the interrupter switch contact is opened and remains open until after the electro-magnet is fully de-energized and has advanced the tape. The function of the interrupter switch is three-fold; it can provide a means

(not shown) and carries bi-directional ratchet (10). Energization of coil (11) attracts armature (12) and engages pawl blade (13) under next tooth. Pawl depressor (14) disengages opposing pawl blade (15). Tip (16) of armature moves card (17) to open interrupter switch contacts (18). Upon de-energization of coil (11), pawl blade (13) steps shaft (9) under urging of spring (19). Interrupter switch recloses near end of armature return. Pulsing of other coil (20) steps tape in reverse direction.

for continuous self-stepping of the tape if the circuit to the magnet coil is in series with the interrupter switch, it can protect the make and break of the star wheel sensing contacts, and it can provide an interlock signal to connected equipment.

METHOD OF SENSING

Star wheel sensing offers the circuit designer advantages not found in any other type of sensing. Star wheel sensing is somewhat like pin sensing, except that the pin has become several pins on a wheel (a star wheel) which is free to rotate at the same time that it is sensing a hole.

The star wheel can sense holes in a paper tape while the tape is in motion. As the star wheel enters a hole (see sketch), its axis is lowered, rocking the arm carrying the star wheel in a counterclockwise direction, and closing the associated switch (a). When a series of successive holes is sensed, the star wheel rotates in mesh with the holes, like a gear on a rack, with no resultant motion on the carrier arm and with the switch remaining closed. Only when the star wheel approaches a no-hole and moves up and over the top surface of the paper

tape (b), is the switch opened. This feature makes star wheel sensing ideal for programming and control applications.

The sensing switch construction is similar to the switches in wire relays. Bounce time is well under a millisecond, normally in the order of 100 micro-seconds. Switch life is rated at 200,000,000 operations. The star wheels effect minimum wear on the tape. Tests conducted indicated an excess of 100,000 passes on paper-myler-paper tape and an excess of 4,000 passes on standard paper tape.

Star wheel sensing can tolerate wide variations in tape punching, is capable of reading any type of tape, and is not effected by tape color, oil content, or material. Conductive and non-conductive tapes are sensed with equal facility.

SPECIFICATIONS

GENERAL

Number of tape channels

Adjustable for 5, 6, 7, or 8

Data hole size

0.072" diameter on 0.100" centers
(EIA Standard RS-227)

Feed hold size

0.046" diameter

Reading speed

Variable from 0 to 30 characters per second bi-directionally

Tape widths

0.687, 0.875, and 1.000 inches

Connections

24 pin amphenol connector, with mating connector supplied. "C" models (with commutator) supplied with 36 pin connector.

CONTACTS

Star wheel sensing switches

8 Form "A" (normally open) bi-furcated contacts, one side common, each consisting of 2 eutectic silver wires, plus 1 stainless steel spring wire for minimizing bounce.

Contact bounce under a millisecond.

Contact rating 3 amps steady state.

For switching under load, current affects life as per table below:

CURRENT (amps)	LIFE (no. of switching operations)
.035	200,000,000
.100	100,000,000
.500	20,000,000
1.000	5,000,000

Tape hold down switch

1 Form "A" contact consisting of 1 eutectic silver wire and 1 stainless steel wire.

Interrupter switches

2 switches, each consisting of 1 Form "B" (normally closed) bi-furcated heavy duty contacts. Current rating 3 amps switching resistive loads. Switch bounce under a millisecond. Models with suffix "B" supplied with double throw interrupter switches.

ELECTRO-MAGNETIC DRIVE

Standard voltages

24, 48, or 90 V.D.C.

Power requirement

Function of pull-in-time. Nominally set at 17 watts.

Pull-in-time

Nominally set at 17 milliseconds.

Drop-out-time

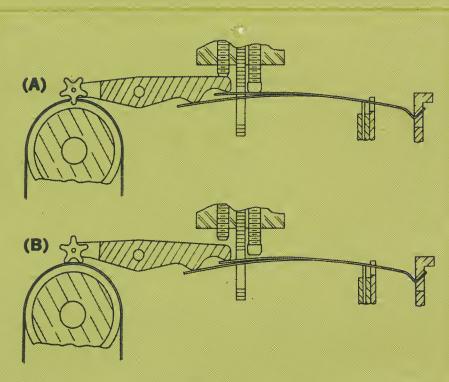
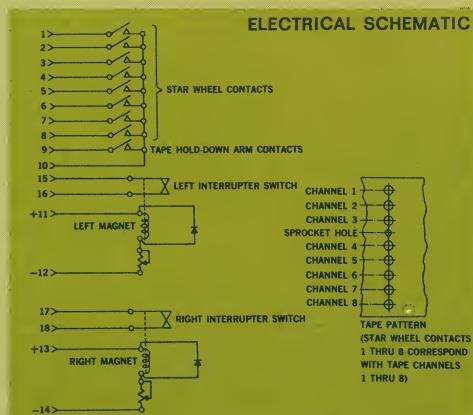
Nominally 15 milliseconds.

Arc suppression

Diode, resistor network across each electro-magnet.

Power dissipation

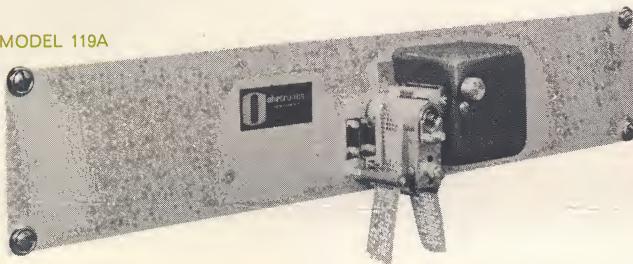
Electro-magnets can dissipate power continuously when operated at rated voltages.



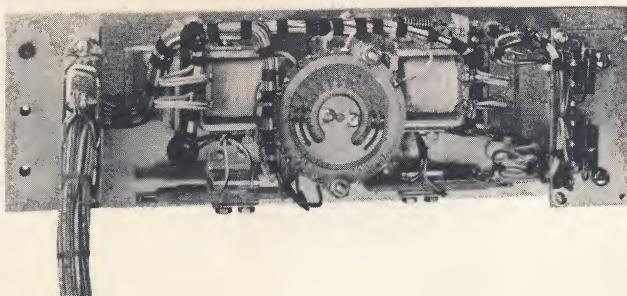
MODEL 119 (REAR VIEW) SHOWN WITH EXTENSION PLATES



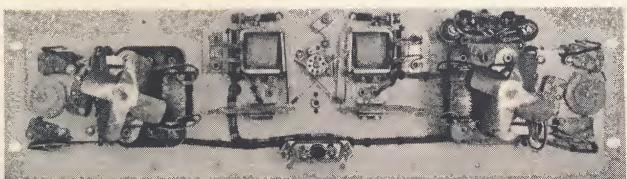
MODEL 119A



MODEL 119C (REAR VIEW)



MODEL 119R (REAR VIEW)



MODEL 119

Model 119 panel size 3½" by 11"

MODEL 119A

Same as Model 119 but assembled on larger panel (3½" by 19") for standard rack mounting.

MODEL 119B

Model 119B has the same specifications as Model 119, supplied with Form "C" interrupter switches (single pole, double throw).

MODEL 119C

Model 119C has the same specifications as Model 119, with the addition of a twelve point commutator switch mounted on the rear extension of the sprocket wheel shaft. This provides a simple inexpensive means of sensing data a line at a time, and storing this data in a block memory. This method avoids the problems inherent in high contact density sensing (80 contacts within 1 square inch) employed by conventional block readers.

MODEL 119R

Model 119R has the same specifications as Model 119, with the addition of spooling mechanism for supply and take-up of tape in both directions. The spooling is accomplished through the use of two reversible motors controlled by dancer arms. The tape loop on each dancer arm commands its associated motor to either take up the slack in the tape, to feed tape to the reader, or to maintain its position. A switch output for tight tape and end-of-tape is provided. Separable 5" reels facilitate tape handling and storing, and are capable of holding 250 feet of tape.

The Model 119R is the smallest size tape reader available complete with spooling mechanism in a panel mounted unit. Panel size is 5¼" high by 19" wide.



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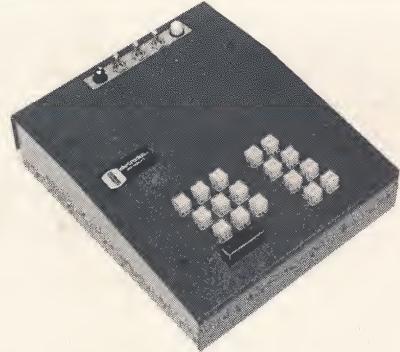
305 West Grand Avenue
Montvale
New Jersey 07645
201 391-7000

twx number
201 391-5118

catalog #119900 3/65

OTHER ohr-tronics PRODUCTS

The series 117 Encoding Keyboard converts key depressions into coded (8 level) arrays of switch closures, and is designed to interface with tape punches, printers, plotters, computers, or other automatic machinery. Any code configuration can be supplied. The code is contained in the form of removable tabs on each key lever, and code changes can be made in the field. The keys are mechanically interlocked to prevent simultaneous depressions of two or more keys. The keyboard can also be electrically interlocked and slaved to the connected equipment.



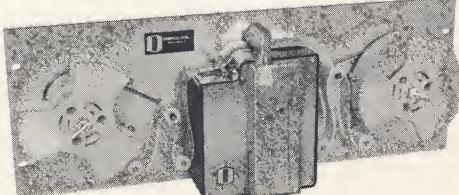
SERIES 117 ENCODING KEYBOARD

The Model 124 Flexi-bit Punch is designed for those applications that require the maximum flexibility of single hole bit punching. The unit punches tape conforming to the new E.I.A. Standard RS-227. The Flexi-bit Punch features a precision sprocket wheel mechanism for simplified tape loading and easy forward and reverse tape stepping. The device will punch paper or Mylar tape, and will accept pre-sprocketed or blank tape.



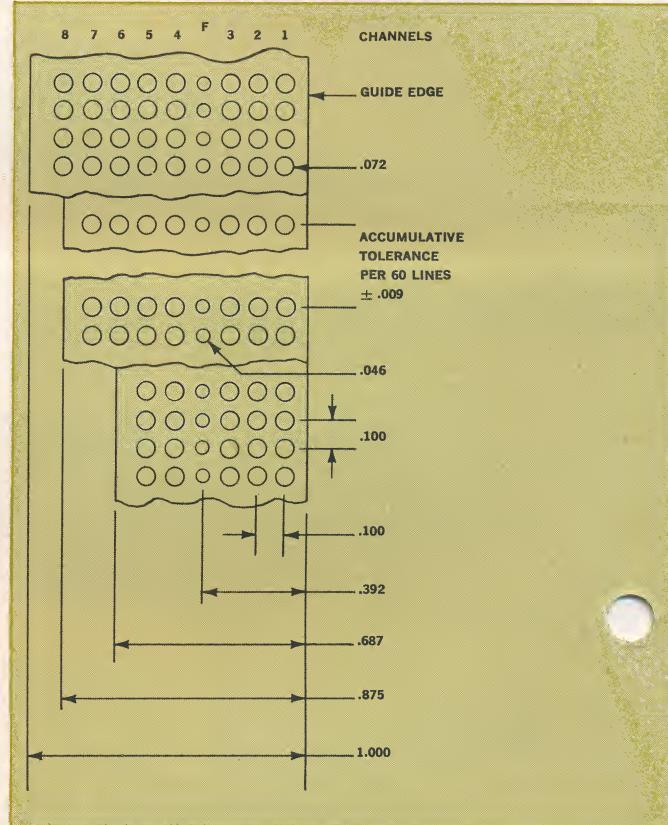
MODEL 124 FLEXI-BIT PUNCH

The Series 110 Paper Tape Punch punches standard 5 to 8 channel paper tape, asynchronously at speeds up to 30 characters per second. The unit is powered from a continuously running induction motor. Holes are punched in the tape in response to input pulses into eight electromagnets which set up interposers for punch pin actuation. Error detection is accomplished by the use of parity checking switches driven by the punch pin interposers, and the tape can be backspaced for error or over-punching.



SERIES 110 PAPER TAPE PUNCH

PUNCHED TAPE STANDARDS



ORDERING NOMENCLATURE

Prefix and suffix letters are used to designate desired features.

PREFIX UC designates a uni-directional tape reader, with clockwise rotation of the sprocket shaft (front view); Prefix UA designates a uni-directional tape reader with anti-clockwise rotation.

SUFFIX A designates a panel size of 3½" high by 19" wide.

SUFFIX B designates Form "C" (double throw) interrupter switches.

SUFFIX C designates the addition of a 12 point commutator on the sprocket shaft.

SUFFIX R designates the addition of tape spooling mechanism, 5" diameter spools, 5¼" by 19" panel size.

EXAMPLE:

UA119BCR

- Bi-directional spooling, size 5¼" x 19"
- Commutator (12 point)
- Form "C" interrupter switches
- Series 119 tape reader
- Uni-directional, anti-clockwise

NOTE: The DC voltage must be specified.
24, 48, and 90 V.D.C. are standard.

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BUSINESS REPLY MAIL

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

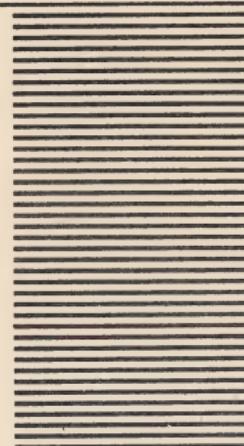
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305 WEST GRAND AVENUE

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YES, I'M INTERESTED IN:

- Tape readers
- Tape punches
- Keyboards
- Other _____

- Please put me on your mailing list
- I have a special application I would like to discuss with one of your engineers
- I would like a demonstration
- Please have your representative phone me _____

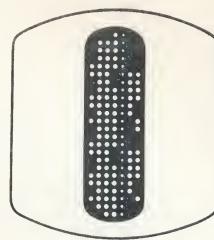
NAME _____

TITLE _____

ADDRESS _____

PRICE LIST

May 10th, 1966

TAPE PERFORATORS

Model 110 Basic 0-30 character per second punch mounted on 7" x 19" panel. 24 or 48 VDC. Motor: 115 Volt, 60 cycles. ----- \$545.00

Model 110 R 110 Punch with 6" spoolers (600 ft. capacity) mounted on 7" x 19" panel. 24 or 48 VDC. Motor 115 V, 60 cycles.--- 695.00

OPTIONS:

G Graphic Arts Tape Format - Advanced feed hole. ----- Add 15.00
 T Reverse Tape Orientation. ----- No charge
 D Small Panel 7" x 11". No spoolers available (Model 110 only).----- No charge
 P Parity switches. ----- Add 35.00
 S Supply reel only. Panel size 7" x 19". (Model 110 R only). ----- Less 75.00
 C 12 position commutator added to drive for block punching. ----- Add 95.00
 M Less motor drive. ----- Less 25.00
 Example: 110 CPR = Panel mounted Tape Punch with reels, commutator for block reading, and Parity switches mounted and wired. \$825.00

NOTE: Model 110 Tape Punch can be used with separable spoolers of larger size.

220 Volt and 50 cycle motors available on special request.

TAPE SPOOLERS

Model 112-5: Tape Spooler, bi-directional with two 5" diameter (250 feet capacity) separable plastic reels. Panel size 5 $\frac{1}{4}$ " x 19".-- 195.00

Model 112-7: Tape Spooler, bi-directional with two 7 $\frac{1}{2}$ " diameter (750 feet capacity) separable plastic reels, panel size 7" x 19".---- 210.00

Model 112-8: Tape Spooler, bi-directional with two 8 $\frac{1}{2}$ " diameter (1,000 feet capacity) separable plastic reels, panel size 8 3/4" x 19".- 210.00

TAPE READERS

Model 119 Paper Tape Reader (3 $\frac{1}{2}$ " x 11") Specify 24 VDC, 48 VDC, or 90 VDC ----- Base Price \$350.00

OPTIONS:

Part #119181: Extension plates and hardware for mounting. Reader on standard 19 inch rack. ----- Add 15.00
 Prefix UC: Uni-directional, clockwise. ----- Less 30.00
 Prefix UA: Uni-directional, anti-clockwise. ----- Less 30.00
 Suffix A: Model 119, panel size 3 $\frac{1}{2}$ " x 19" ----- Add 15.00
 Suffix B: Model 119 with double throw (Form "C") interrupter switches. ----- Add 20.00
 Suffix C: Model 119 with 12 point commutator for block reading. ----- Add 95.00
 Suffix R: Model 119 with bi-directional spooling mechanism, with panel 5 $\frac{1}{4}$ " x 19" and two 5" diameter (250 feet capacity) separable plastic reels. ----- Add 175.00

NOTE: The required model may be specified using the appropriate prefix and suffix letters.

Example: UC119CR ----- Total Price \$590.00

ACCESSORY EQUIPMENT

Model 117:	18 Key Encoding Keyboard. Specify 24 VDC, 48 VDC, or 90 VDC. -----	395.00
Model 124:	Flexi-bit Punch.-----	89.00
Tape Kit:	25 feet of paper-mylar-paper pre-sprocketed tape, plus 10 patches for splicing. ---	7.50
Paper Tape:	6" diameter roll (600 feet). -----	.75
Tape Reels:	6" reel for punch (350 feet take-up capacity). 5" reel for reader (250 feet take-up capacity). 7 $\frac{1}{2}$ " reel for reader or punch (750 feet take-up capacity). -----	5.00
Special finish on panel:	Customer must supply process specifications and/or color chip. Set-up charge per order.	20.00
	Price per panel. -----	10.00

QUANTITY DISCOUNT SCHEDULE

1 - 5	List
6 - 9	5%
10 - 24	10%
25 - 49	15%
50 - 99	20%
100 - Up	Consult Factory

Quantity discounts apply only to orders which specify a delivery schedule for the entire order over a maximum period of twelve months from date of order.

All components or systems may be modified to meet customer's specifications.
 All prices are subject to change without notice. Terms F.O.B. Montvale,
 New Jersey, net 30 days.



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